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6.111 Final Project
Checkoff List

1. GPS Module – The GPS module samples the data-stream from the GPS at 4800 baud and selects pieces of information to pass to the requestor. This module is composed of a clock to time the data sampling, a decoder that converts the serial information to 8-bit ASCII, and a communicator that obtains requested pieces of information from the decoded data-stream.

   ☐ Demonstrate GPS functionality – Describe the GPS data-stream. Use the LEDs to indicate the state of the GPS communicator and confirm the correct functionality of the GPS module.

2. Sensor Module – The Sensor module samples using analog switches to control voltage routing and an ADC to digitize each measurement. The module is composed of a clock to time the sensor control signals, a decoder that is used to manage the analog switches, a controller that generates the required signals for reading/writing from the ADC, and a communicator that is used to multi-sample, average, and configure the sensor readings.

   ☐ Demonstrate Sensor functionality – Describe the sensor operation and timing considerations. Confirm on the video display the detection of moisture through several measurements of wet and dry soils.

   ☐ Demonstrate Sensor configurability – Zero the sensor. Describe the measurement multi-sampling and averaging scheme.

3. Video – The Video module generates a 640 x 480 display of the measurement readings and associated GPS information. If time permits, this module will be developed to drive an interlaced 5” LCD. If this can be accomplished, a basic GUI will be developed and loaded to ROM for display.

   ☐ Demonstrate Display functionality – Describe display operation. Show the display respond to a measurement request.